RCRA FACILITY ASSESSMENT REPORT
CALGON CORPORATION
PASADENA, TEXAS
TXD086476850

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Region 6
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EPA Contract No. 68-W9-0041

Work Assignment No. R265801

February 18, 1993

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DISCLAIMER

This report was prepared for the U.S. Environmental Protection Agency (EPA), Region 6, by PRC Environmental Management, Inc., in fulfillment of Contract No. 68-W9-0041, Work Assignment No. 265801. The opinions, findings, and conclusions expressed herein are those of the contractor and not necessarily those of EPA or other cooperating agencies. Mention of the company or product names is not to be considered an endorsement by EPA.

This document is intended to assist EPA and state personnel in developing requirements for a Resource Conservation and Recovery Act (RCRA)-regulated facility owner or operator to conduct a RCRA facility investigation (RFI) pursuant to Title 40, Code of Federal Regulations (CFR), Part 264. EPA will not necessarily limit the RFI or other requirements to those that correspond with the recommendations set forth herein. EPA and state personnel must exercise their technical judgment in using the RCRA Facility Assessment report, as well as other relevant information, in determining what RFI or other requirements to include in a permit or order.

EXECUTIVE SUMMARY

PRC Environmental Management, Inc. (PRC), conducted a Resource Conservation and Recovery Act (RCRA) facility assessment (RFA) at the Calgon Corporation facility located in Pasadena, Texas. The RFA included a preliminary document review (PR), followed by a visual site inspection (VSI). During the PR, files were reviewed at the U.S. Environmental Protection Agency (EPA) Region 6 office in Dallas, Texas, and the Texas Water Commission (TWC) Austin office. The PR was followed by a VSI to (1) determine the facility's current operating status, (2) identify solid waste management units (SWMU) and areas of concern (AOC), (3) assess the regulatory compliance of those units, and (4) assess actual and potential releases to the environment from those units.

In 1973, Calgon began operation at its facility in Pasadena, Harris County, Texas. Calgon is a wholly-owned subsidiary of Merck and Company, Inc. The facility occupies about 18 acres in an industrial area.

Calgon manufactures municipal and industrial water treatment chemicals. The facility originally conducted two processes, a liquid blend process and a carbon regeneration process. Because of economic conditions, Calgon shut down the carbon regeneration process in 1982.

The liquid blend process produces water treatment chemicals including inorganic salts, water soluble polymers, and acids. Raw product stored in aboveground storage tanks is pumped to the blend unit, then blended into a specific product mix for customers.

Waste management units associated with the liquid blend process include three below-grade concrete sumps, a clarifier tank, and an inactive chromate tank.

The carbon regeneration process restored spent carbon to its original activity. The spent carbon was thermally treated to remove and destroy the absorbed organics.

Past waste management units associated with the carbon regeneration process, no longer in operation, include carbon storage sumps and a spent carbon storage pit.

In accordance with hazardous waste management practices at the facility, Calgon submitted a Notification of Hazardous Waste Activity form on August 14, 1980. The notification stated that the facility would generate, treat, store, and dispose of hazardous wastes with EPA waste codes U133 and U154. On November 17, 1980, Calgon submitted a Hazardous Waste Part B Permit Application for the storage and processing of spent carbon. On October 29, 1985, Permit No. HW-50026-001 was issued for storage and processing, in seven aboveground storage tanks, of (1) spent carbon, (2) contaminated water from handling and processing of spent carbon, and (3) contaminated water associated with the carbon regeneration process. On August 26, 1986, Calgon submitted an amended Part B Permit Application, which addressed the storage of spent carbon in concrete sumps. On March 17, 1986, Calgon requested that its Part B Permit be amended to allow for closure of the seven carbon storage tanks.

During the VSI conducted on December 1, 1992, Calgon representatives stated that they planned to request that Calgon's Part B Permit be withdrawn because the permitted tanks were never used for hazardous waste storage, and the tanks will not be used in the future for hazardous waste storage. Currently, the facility operates as a less-than-90-day storage facility.

Calgon has an agreement with the Gulf Coast Waste Authority to discharge its wastewater to the Gulf Coast Waste Authority publicly-owned treatment facility.

PRC identified 10 SWMUs and one AOC during the PR and VSI. Five of the SWMUs are active, and two require additional investigation. One inactive SWMU requires additional investigation. The AOC is active and does not require any further investigation.

1.0 INTRODUCTION

PRC Environmental Management, Inc. (PRC), received Work Assignment No. 265801 from the U.S. Environmental Protection Agency (EPA) under Contract No. 68-W9-0041. Under this work assignment, PRC is contracted to provide technical support on a Resource Conservation and Recovery Act (RCRA) facility assessment (RFA) for the Calgon Corporation facility located in Pasadena, Texas.

This report describes the findings of a preliminary review (PR) and a visual site inspection (VSI), and follow-up correspondence initiated by PRC. It includes (1) a description of the facility and its solid waste management units (SWMU), (2) an identification of waste release potential through various contaminant migration pathways, and (3) a summary of conclusions and recommendations regarding further EPA activity, including the need for a RCRA facility investigation (RFI).

1.1 PURPOSE OF THE RCRA FACILITY ASSESSMENT

The purpose of the RFA is to identify environmental releases or potential releases from SWMUs that may require corrective action. The RFA is the first step in implementing the corrective action provisions of the 1984 Hazardous and Solid Waste Amendments (HSWA) to RCRA. Specifically, Sections 3004(u), 3004(v), and 3008(h) grant EPA the authority to initiate corrective action for releases of hazardous wastes and constituents from SWMUs at RCRA-regulated facilities. An RFA generally consists of (1) a PR, (2) a VSI, and, if necessary, (3) a sampling visit (SV). An SV is conducted only when available information is insufficient to support a recommendation for an RFI. An SV was not conducted as part of this RFA.

According to EPA's guidance document (EPA, 1986), the four purposes of an RFA are as follows:

- Identify and gather information on releases at RCRA-regulated facilities.
- Evaluate SWMUs and other areas of concern (AOC) for releases to all media, and evaluate all regulated units for releases to media other than ground water.

- Make preliminary determinations regarding releases of concern and the need for further actions and interim measures at the facility.

- Screen from further investigation those SWMUs and AOCs that do not pose a threat to human health and the environment.

An RFA is performed when RCRA permits are requested or modified, or when the facility ceases its management of RCRA-regulated solid wastes.

1.2 PROCEDURES

The RFA was conducted in accordance with procedures outlined in EPA's RFA guidance document (EPA, 1986). The PR was conducted at the EPA Region 6 office in Dallas, Texas, on October 8, 1992, and at the Texas Water Commission (TWC) in Austin, Texas, on October 16, 1992.

PRC reviewed all available documents relevant to the RCRA program. The main sources of information were (1) the RCRA Part A and Part B Permit Applications and subsequent revisions, (2) general correspondence with state and federal agencies concerning the facility, (3) various facility schematic diagrams, and (4) solid waste inspection reports. PRC used the information collected during the PR to prepare a list of potential SWMUs. PRC then submitted this potential list of SWMUs, along with a request for general facility information, through EPA Region 6 to the Calgon representative, Ms. Betty Beard, for review and input. Most of the information requested was provided by Calgon facility representatives during the VSI.

PRC conducted the VSI on December 1, 1992, at the Calgon facility in Pasadena, Texas. Upon PRC's arrival at the facility, PRC and Calgon personnel held a preliminary meeting to (1) discuss the facility's history, organization, and operations, and (2) resolve questions concerning its hazardous waste management practices. PRC representatives explained the purpose of the visit and discussed the RFA process. Meeting participants included the following:

- Terry DeWolf — Calgon Corporation
- Betty Beard — Calgon Corporation
- Michael Babos — Merck and Company, Inc.

- Christine Green PRC
- Roy Mathew PRC

To gain an understanding of Calgon's waste management practices, PRC personnel visited the entire facility, including all SWMU locations identified during the PR. The VSI and follow-up telephone calls provided the information needed to make the recommendations presented in this report.

A summary trip report and photographs taken during the VSI are included in the Appendix.

1.3 REPORT

This report summarizes the information obtained during the PR and VSI, and evaluates the information in terms of the RFA objectives. The facility is described in Section 2.0; the environmental setting is discussed in Section 3.0; SWMUs are identified in Section 4.0; AOCs are addressed in Section 5.0; potential human and environmental receptors are described in Section 6.0; and conclusions and recommendations are presented in Section 7.0.

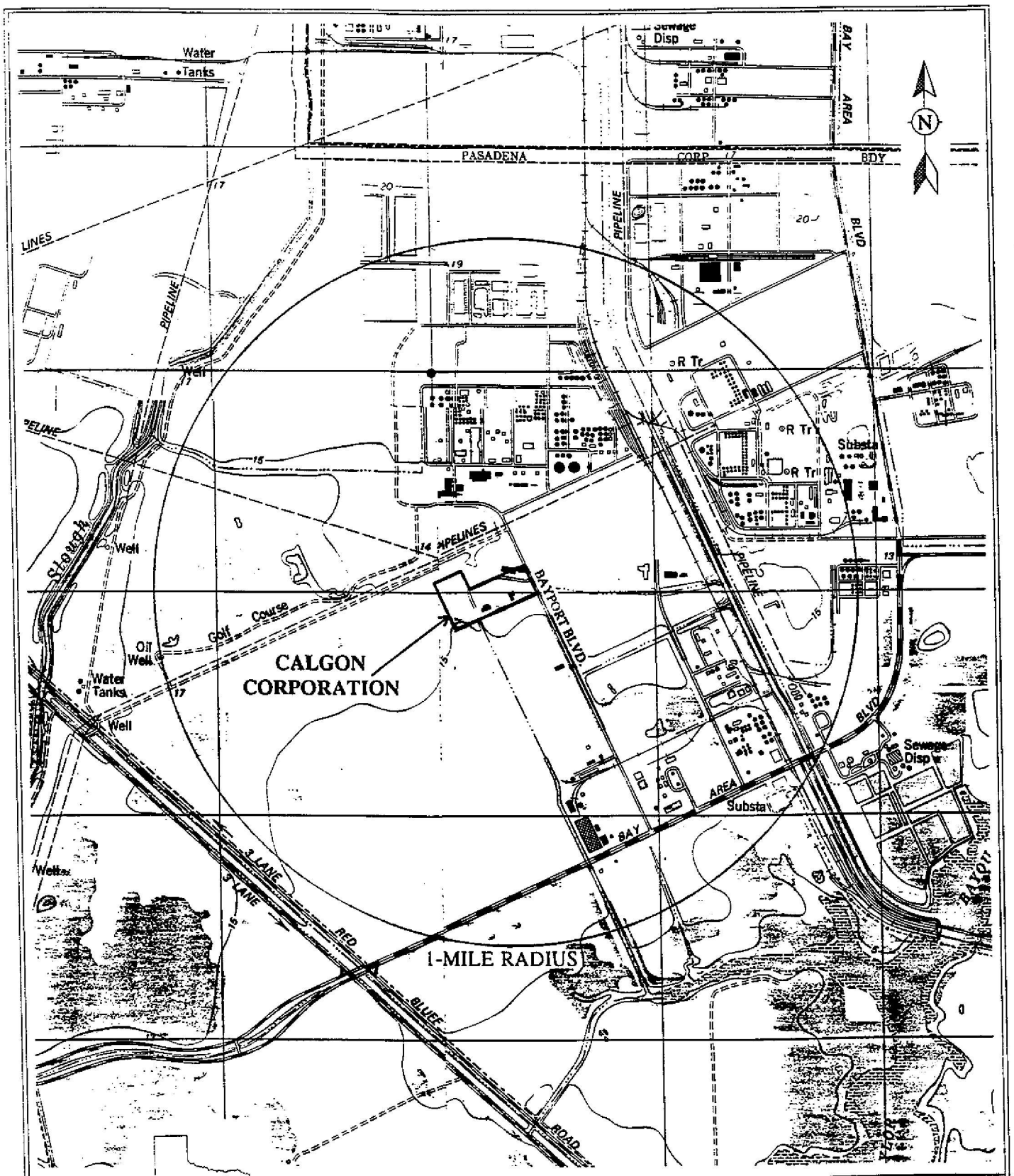
2.0 FACILITY DESCRIPTION

This section describes (1) the location of the facility, (2) its historical and current operations, and (3) the sources and types of wastes managed at the facility.

2.1 SITE LOCATION

Calgon Corporation is located at 9640 Bayport Boulevard, Pasadena, Harris County, Texas. The facility occupies about 18 acres in an industrial area. The facility coordinates are 29°37'03" north latitude and 95°03'43" west longitude (Figure 1).

Calgon is bordered by the Hoechst Celanese facility on the north, Lonza, Inc. on the south, Bayport Boulevard on the east, and undeveloped land on the west.



SOURCE: USGS, LEAGUE CITY AND LA PORTE QUADRANGLES, 1982

CALGON CORPORATION
PASADENA, TEXAS

FIGURE 1
SITE LOCATION MAP

PRC Environmental Management, Inc.

Calgon began operation at its Bayport facility in 1973. Calgon is a wholly-owned subsidiary of Merck and Company, Inc. Calgon manufactures chemicals for use in industrial and municipal water treatment at its Bayport facility. The plant originally conducted two processes, a liquid chemical blending process and a carbon regeneration process. The carbon regeneration process has been inactive since 1982. The facility currently employs 65 people.

The site was previously undeveloped land owned by Lonza, Inc.

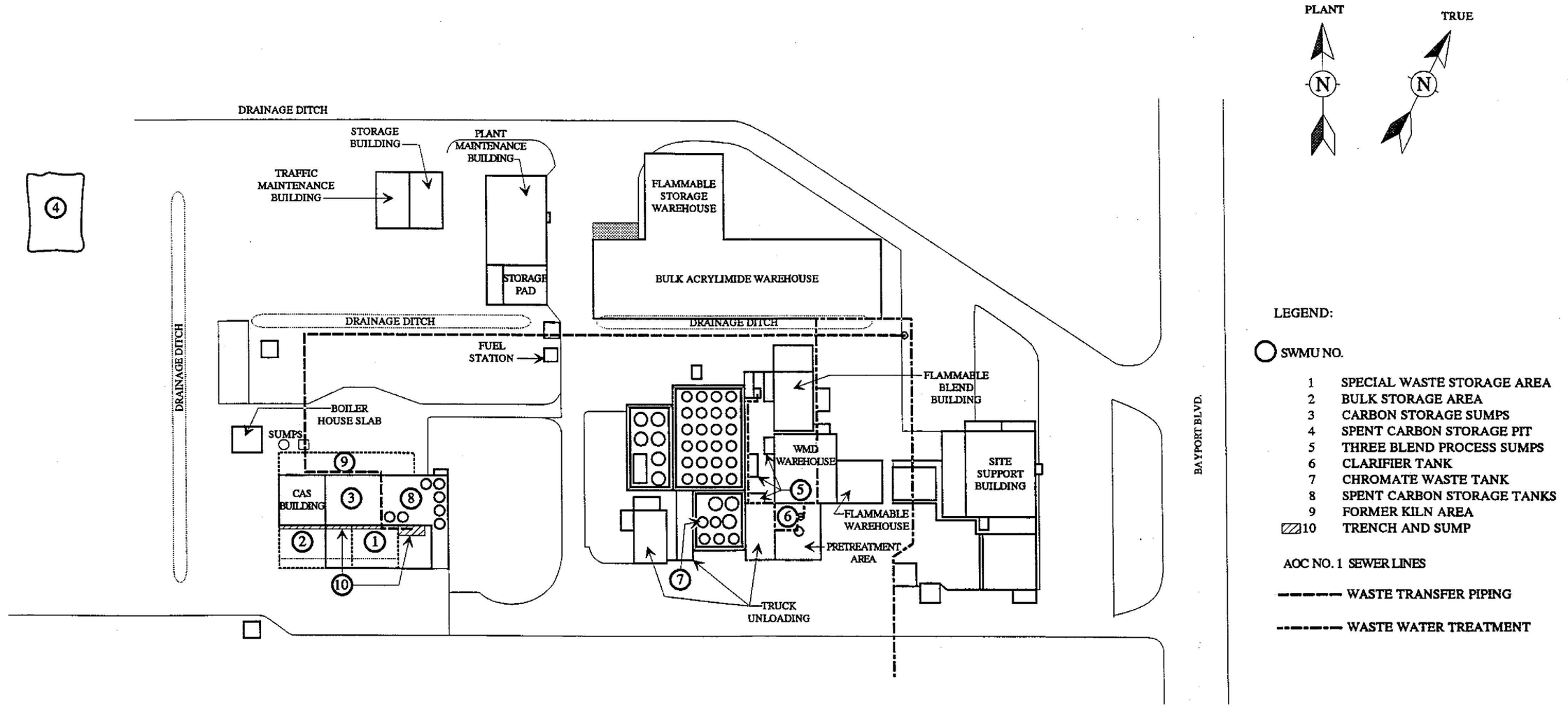
Calgon has a plant-wide security system. A 6-foot-high chain-link fence, with three strands of barbed wire and an electronically coded access gate, surrounds the facility and limits access to the property.

A SWMU and AOC location map of the facility is presented in Figure 2. Additional facility data are provided below.

Facility Location:	Bayport Blvd. about 1/2 mile north of Bay Area Blvd. Harris County, Texas
Facility Address:	9640 Bayport Boulevard Pasadena, TX 77507
Facility Contact:	Betty Beard
Telephone:	(713) 474-4401
EPA ID Number:	TXD086476850
TWC Reg. No.:	31373

2.2 FACILITY OPERATIONS AND HAZARDOUS WASTE MANAGEMENT

Calgon manufactures municipal and industrial water treatment chemicals. The facility originally conducted two processes, a liquid blend process and a carbon regeneration process. Because of economic conditions, Calgon shut down the carbon regeneration process in 1982.



SOURCE: CALGON CORPORATION, 1989

NOT TO SCALE

CALGON CORPORATION
PASADENA, TEXAS

FIGURE 2
SWMU AND AOC LOCATION MAP

PRC Environmental Management, Inc.

2.2.1 Liquid Blend Process

Products from the liquid blend process are water treatment chemicals consisting of solutions of inorganic salts, water soluble polymers, and acids. Raw product materials used in this process are received by the facility in trucks and stored in (1) aboveground storage tanks in the product tank farm, (2) drums, or (3) bags. Raw product is pumped in the blend unit via hoses, then blended into a specific product mix for Calgon's customers. The blended batch can be drummed or pumped to a truck for shipment or temporarily stored in the product tank farm prior to shipment.

Waste management units associated with the liquid blend process included three below-grade concrete blend process sumps (SWMU No. 5), a 3000-gallon clarifier tank (SWMU No. 6), and a 6000-gallon aboveground chromate waste storage tank (SWMU No. 7). Chrome-contaminated washwater was stored separately in the chromate waste tank. The chromate waste was then sent to the Empak Deer Park, Texas, facility for disposal by deep well injection. Floor drains in the blending area and the truck loading and unloading areas collect into the blend sumps (SWMU No. 5). Since 1975, Calgon has had an agreement to treat its wastewater from on-site operation processes prior to disposal into the Gulf Coast Waste Authority (GCWA) system. The GCWA is an industrial publicly-owned treatment works (POTW). The wastewater from the blend sumps is pumped to the clarifier tank for pH adjustment and settling out of solids prior to disposal to the POTW. The average daily flow is 50 gallons per minute (gpm) or 9,000 gallons per day. All waste storage associated with the blending process is less-than-90-day storage.

2.2.2 Carbon Regeneration Process (Inactive)

The carbon regeneration process restored spent carbon to its original state. The spent carbon was transported from Calgon's municipal and industrial customers by truck to the Calgon facility for regeneration by thermal treatment to remove and destroy the absorbed organics. After the spent carbon was received, dirty water that had been in contact with spent carbon was pumped into the truck to slurry the spent carbon. The spent carbon was then pumped to the spent carbon storage sumps (SWMU No. 3), where it was stored under water to prevent releases of carbon fines and organic vapors in the air. Spent carbon was also stored in seven permitted aboveground storage tanks (SWMU No. 8). The spent carbon water slurry was transferred to a feed kiln tank then flowed to a

dewatering screw and into the kiln (SWMU No. 9). The spent carbon proceeded through the kiln where it was regenerated by vaporizing the water and the absorbed organics. The vaporized organics were incinerated. The regenerated carbon was discharged to a quench tank, where it was pumped to the carbon regeneration storage sumps prior to shipment back to customers.

2.3 REGULATORY STATUS

On November 13, 1978, the Texas Department of Water Resources (TDWR) issued Solid Waste Registration number 31373 to Calgon. Wastes identified on the registration as generated by Calgon included (1) filtered wastewater from carbon regeneration, (2) sludge containing carbon fines and absorbed organic compounds, (3) inorganic slag containing calcium, sodium, and aluminum silicates, and (4) general waste refuse.

On August 14, 1980, Calgon submitted a Notification of Hazardous Waste Activity to EPA. The notification stated that the facility would generate, treat, store, and dispose of hazardous wastes with codes U133 and U154 (Calgon, 1980a).

On November 17, 1980, Calgon submitted a Hazardous Waste Permit Application for the storage and processing of spent carbon (Calgon, 1980b).

In a letter dated November 18, 1981, Calgon requested that EPA amend its Part A Permit Application to allow the addition of wastes with EPA waste codes U188, U019, and U004 to be stored at the facility (Calgon, 1981).

On November 19, 1981, TDWR conducted a solid waste compliance inspection at Calgon. TDWR noted the following deficiencies: (1) the spent carbon storage pit needed to be deed-recorded, and (2) drums were observed leaking oil in the drum storage area, located adjacent to the react building. On December 18, 1981, TDWR sent Calgon a notice of violation (NOV) letter regarding deficiencies observed during the November 19, 1981, inspection, requesting Calgon's response by January 15, 1982 (TDWR, 1981).

In a letter, dated January 21, 1982, Calgon responded to the NOV letter, dated December 18, 1981, by stating its actions to correct the deficiencies (Calgon, 1982).

On April 26, 1983, TDWR conducted a solid waste compliance inspection at Calgon. TDWR observed several deficiencies during the inspection: (1) the Notice of Registration (NOR) needed to be amended to show that wastes were no longer being generated, (2) a roll-off container that stored chromate-bearing solids needed to be dated and labelled as hazardous waste, (3) underground sumps were not inspected weekly, (4) the facility did not have a waste analysis plan for the liquid blending chemical wastes, and (5) the facility did not have an operating record and closure plan for the blending process. On May 17, 1983, TDWR sent Calgon an NOV letter regarding areas of deficiencies observed during the April 26, 1983, inspection (TDWR, 1983). On June 1, 1983, Calgon responded to the NOV letter by describing its actions to correct the deficiencies (Calgon, 1983).

On February 9, 1984, TDWR conducted a solid waste compliance inspection at the Calgon facility. TDWR observed the following deficiencies: (1) the NOR needed to be amended to include three tanks and a roll-off container as on-site management units, (2) sludge from the equipment washing settling tank needed to be tested for hazardous constituents, (3) personnel training records were incomplete, (4) waste analysis was not being conducted by the facility, and (5) the facility's closure plan was incomplete. On June 11, 1984, TDWR sent Calgon an NOV letter regarding areas of deficiencies observed during the February 9, 1984, inspection (TDWR, 1984). Calgon's response to the NOV letter was not available in the files reviewed.

On October 29, 1985, Permit No. HW-50026-001 was issued for storage and processing in seven aboveground storage tanks of (1) spent carbon, (2) contaminated water from handling and processing of spent carbon, and (3) contaminated water associated with the carbon regeneration process (Calgon, 1985).

On March 17, 1986, Calgon notified TWC - Successor to TDWR - of its intent to amend its Part B Permit Application to allow closure of the seven carbon storage tanks (Calgon, 1986a).

On August 12, 1986, Calgon submitted to TWC a Part B Permit Application that addressed the storage of spent carbon in concrete sumps (Calgon, 1986b).

On November 24 and 25, 1987, TWC conducted a compliance evaluation inspection (CEI) of Calgon. The TWC investigator noted the following deficiencies: (1) Calgon's NOR needed to be amended to reflect waste management practices, and (2) original manifests were not available in the files.

On January 11, 1988, TWC sent Calgon an NOV letter regarding deficiencies observed during the November 24 and 25, 1987, inspection (TWC, 1988a). Calgon's response to the NOV letter was not available in the files reviewed.

On November 30, 1988, and January 4, 1989, TWC conducted a CEI of Calgon. The TWC investigator noted the following deficiencies: (1) Calgon failed to notify TWC that two inactive spent carbon tanks were being used for storage of product, (2) inspection logs for the chromate tank were incomplete - accumulation date, waste shipment date, tank level reading, and content levels were not included on inspection logs, (3) Calgon had not responded to a finance assurance amount discrepancy, (4) tank integrity assessment had not been conducted on the chromate tank, (5) inspection log dates were omitted, and (6) copies of restricted waste notification for chromate wastewater shipped off-site were not available.

On February 21, 1989, TWC sent Calgon an NOV letter regarding areas of deficiencies observed during the November 30, 1988, and January 4, 1989, inspection (TWC, 1989). On March 17, 1989, Calgon responded to the NOV letter by addressing the deficiencies (Calgon, 1989a).

On November 30, 1990, and December 6, 1990, TWC conducted a CEI of Calgon. TWC noted the following deficiencies: (1) leakage around the chromate waste tank was not documented on an inspection log, (2) the NOR needed to be amended by the facility, (3) containers in the drum storage area were bulging and dented, also, some were open, and one drum was leaking onto the ground, (4) chrome waste was observed on the ground near the truck washing area and around the chrome waste tank, (5) no hazardous waste labels or dates of accumulation were on the drums in the container storage area, (6) drums were corroded, and contents were gone, (7) drums were stacked

four pallets high in the drum storage area; some of the drums were leaning, because they were supported only by three drums underneath; and some of the drums were stacked upside down, (8) there was no aisle space in the container storage area, and (9) a tank integrity assessment was not conducted on the chromate waste tank.

On January 3, 1991, TWC sent Calgon an NOV letter regarding areas of deficiencies observed during the November 30, 1990, and December 6, 1990, inspection, requesting that Calgon respond to deficiencies by February 5, 1991 (TWC, 1991). On February 4, 1991, Calgon responded to the NOV letter with a schedule for corrective action (Calgon, 1991).

On May 19 and 22, 1992, TWC conducted a CEI of Calgon. TWC noted an NOR violation during the inspection; however, the violation was not cited, because Calgon had previously requested an amendment to its NOR. Violations noted during the November 30 and December 6, 1990, inspection had been resolved (TWC, 1992).

Calgon currently holds permit 650 from the Texas Air Control Board (TACB) for emissions from blend process areas and units associated with the process.

Calgon is currently operating as a less-than-90-day storage facility and plans to withdraw its Part B Permit.

3.0 ENVIRONMENTAL SETTING

This section describes the environmental setting and the water resources of the Calgon facility located in Pasadena, Texas. This information provides a basis for evaluating potential impacts on human health and the environment from existing or potential releases of hazardous materials to the environment from the SWMUs and AOCs identified at the Calgon facility. The following subsections describe the land use, climate, topography and surface water, soils, geology, and ground water around the site.

3.1 LAND USE

Calgon is located in the center of the Bayport industrial park, about 25 miles southeast of Houston. Petrochemical and chemical facilities border the facility on the north, south, and east. Undeveloped land borders the facility on the west. The nearest residential area is located 2 miles south of the facility. There are no residents living within 1 mile of the facility. The population within 3 miles of the facility is about 9,000. Armand Bayou, a designated wetland, lies within a 2-mile radius of the facility.

3.2 CLIMATE

The climate in Harris County, Texas, is subtropical humid. The mean January temperature is 51.4°F, and the mean July temperature is 83.1°F [National Oceanic and Atmospheric Administration (NOAA), 1982]. The mean annual temperature is 68.5°F (Larkin and Bomar, 1983).

Snow is rare. In an occasional year, several inches will fall in January or February. The mean annual snowfall is 0.4 inch [Dallas Morning News, (DMN), 1991].

The average annual precipitation is 42.6 inches (DMN, 1991). The 100 year 24-hour rainfall is 12.5 inches (Hershfield).

Prevailing winds are from the southeast and south, except in January, when the prevailing winds are northerly. The mean annual wind speed is 12.4 miles per hour (DMN, 1991).

3.3 TOPOGRAPHY AND SURFACE WATER

The topography of the area is relatively flat. Calgon is located in an area that averages about 15 feet above mean sea level (MSL) [United States Geological Survey, (USGS), 1982].

Calgon is located in the watershed area classified as segment 1006 of the San Jacinto River Basin. Segment 1006 is not classified as fishable or swimmable. It is used for industrial water supply and navigation (TWC, 1988b).

Runoff from the facility flows from a central drainage ditch on Calgon's property 1 mile south into Taylor Bayou, which flows into Taylor Lake, and Clear Lake. Clear Lake flows 4 miles east into Galveston Bay.

Calgon is located within a 100-year floodplain [Federal Emergency Management Agency (FEMA), 1990].

3.4 SOILS

Calgon is located on Bernard Clay soils. Bernard Clay soils have a dark gray loam on the surface, underlain by dark gray unconsolidated clay sediments. The surface layer is friable, neutral, very dark clay loam about 6 inches thick, underlain by a layer about 48 inches thick, consisting of firm, neutral, dark gray clay in the upper part and very firm, moderately alkaline, dark gray clay in the lower part. The next layer is firm, moderately alkaline, gray clay with yellow-brown mottles and some calcium carbonate concretions. The Bernard Clay soils are poorly drained. Surface runoff is slow. Permeability is very slow, and available water capacity is high [United States Department of Agriculture (USDA), 1976].

3.5 GEOLOGY

The area is predominated by formations of the Pleistocene age. The surface sediments consist of deposits composed of gray and red-orange fine sand, and yellow and gray clay silt. Sands predominate in the lower portion of the section, and clays predominate in the upper part. On the north, the strata are bordered by the Hockley escarpment. Sediments are unconsolidated alluvial, deltaic, and brackish water deposits.

The strata are composed of the Lissie Formation overlain by the Beaumont Formation. The Lissie Formation lies unconformably upon the Goliad Formation (Sellards, 1990).

The Beaumont Formation is composed of clay and marl, interbedded with sand lentils. The Beaumont Formation consists of 60 percent clay, 20 percent silt, and 20 percent sand. The Beaumont

Formation ranges from 400 to 900 feet thick. The Beaumont Formation lies unconformably upon the Lissie Formation and is overlain by stream deposits (Sellards, 1990).

The Lissie Formation is composed of sand containing gravel lentils, interbedded with clay and silt. The Lissie Formation consists of 60 percent sand, 20 percent sandy clay, 10 percent gravel, and 10 percent clay. The Lissie Formation ranges from 400 to 600 feet in thickness (Sellards, 1990).

The Goliad Formation is composed of alternating beds of sandstone and marl. The average thickness of the formation is 250 feet. The Goliad Formation consists of 80 percent sand, 5 percent gravel, 10 percent clay, and 5 percent calcium carbonate (Sellards, 1990).

3.6 GROUND WATER

The ground-water source in the Pasadena area is the Gulf Coast Aquifer. The Gulf Coast Aquifer includes the Chicot and Evangeline Aquifers, which are hydraulically connected. The Gulf Coast Aquifer is composed of alternating beds of clay, silt, sand, and gravel. The Chicot Aquifer consists of the Willis, Lissie, and Beaumont Formations (Muller, 1979). The Chicot Aquifer ranges from 400 to 800 feet thick. Ground water flows to the southeast (Baker, 1979).

The Evangeline Aquifer is composed of alternating beds of sand and clay, and consists of the Goliad Formation (Muller, 1979). The Evangeline Aquifer ranges from 400 to 1,400 feet thick. Recharge to the aquifer is from the overlying Chicot Aquifer, and from infiltration of precipitation in the outcrop areas (Baker, 1979).

The main water-bearing units are the Goliad, Willis, and Lissie Formations (Muller, 1979). In this area, depth to ground water is about 9 feet.

A public supply ground-water well, owned by the City of Seabrook, is located within 3 miles south of the facility. This well is screened at a depth of 670 feet in the Chicot Aquifer (Williams and others, 1988).

4.0 SOLID WASTE MANAGEMENT UNITS

This section discusses the SWMUs at the Calgon facility, and evaluates actual or potential contaminant releases from those units. PRC identified 10 SWMUs during the PR and VSI. Figure 2 shows the locations of the SWMUs. Photographs of the SWMUs are provided in the Appendix. Unless otherwise referenced, data presented in this section were obtained during the VSI.

4.1 SWMU NO. 1 - SPECIAL WASTE STORAGE AREA (Photograph No. 1)

Description

The special waste storage area (SWSA) is located on the south side of the react building. Drums and totes of hazardous and nonhazardous wastes are stored on wooden pallets on a concrete pad inside a fenced 40-by-39.5-foot area. The concrete pad slopes to a trench, where spills would collect in a below-grade sump (SWMU No. 10).

Status

The SWSA has been active since 1985 and is not RCRA-regulated. Wastes are stored for less than 90 days prior to off-site disposal.

Waste Type

The SWSA is used for storage of hazardous and nonhazardous materials.

Waste Management

The SWSA receives and stores wastes from facility operations that cannot be drained to the blend process sumps (SWMU No. 5). Storage is for less than 90 days prior to off-site disposal at Chemical Waste Management's Carylss, Louisiana, facility.

Environmental Releases

No environmental releases have been documented or reported from the SWSA.

Remedial Action Taken

No remedial action has been associated with this SWMU.

Suggested Action

PRC recommends no further investigation for this SWMU.

Reasons

Secondary containment is in good condition. The potential for a release is low, because any spills would flow to the trench and collect in a below-grade sump (SWMU No. 10).

4.2 SWMU NO. 2 - BULK STORAGE AREA (Photograph No. 2)

Description

The bulk storage area (BSA) is located on the south side of the react building. Two roll-off containers, used for bulk storage, are located on a concrete pad within a fenced 66-by-39.5-foot area. The concrete pad slopes to a trench where spills would collect. Both containers are enclosed and labelled. The capacity of each roll-off container is about 8 cubic yards. A 4-inch-high concrete curb separates the two roll-off containers.

Status

The BSA has been active since 1985 and is not RCRA-regulated.

Waste Type

One roll-off container is used to hold nonhazardous materials generated by the facility, such as paper, plastic containers and general plant refuse. The other roll-off container is used to contain hazardous filter bags and contaminated spill cleanup material.

Waste Management

Hazardous wastes are stored for less than 90 days prior to off-site disposal.

Environmental Releases

No environmental releases have been documented or reported from the BSA.

Remedial Action Taken

No remedial action has been associated with this SWMU.

Suggested Action

PRC recommends no further investigation for this SWMU.

Reasons

Secondary containment is in good condition. The potential for a release is low, because any spills would flow to the trench and collect in the sump (SWMU No. 10).

4.3 SWMU NO. 3 - CARBON STORAGE SUMPS (Photographs No. 3, 4, and 5)

Description

Two spent carbon and two regenerated carbon storage sumps are located in the react building. Each sump is rectangular, consisting of reinforced concrete measuring 13 feet by 25 feet, with a sloped bottom ranging from 16-2/3 feet to 20-2/3 feet deep. The concrete wall is 12 inches thick. Each sump has an operating capacity of 34,024 gallons. About 40 percent of the volume of the sumps is below grade.

Status

The sumps were used from 1975 to 1982. In 1985, the facility closed the sumps.

Waste Type

Spent activated carbon, immersed in dirty water, was stored in the spent carbon sumps prior to regeneration through the kiln. Regenerated carbon immersed in clean water was stored in the regenerated carbon sumps.

Waste Management

Water that had come into contact with spent carbon (dirty water) was pumped into transport trucks containing spent carbon from customers. This was for the purpose of slurrying the carbon. The spent carbon was then transferred to a screen for particle removal, then pumped to the spent carbon storage sumps. The spent carbon was transferred from the spent carbon sumps to the kiln feed tank. After the carbon was regenerated, it was pumped to the regeneration carbon storage sumps prior to being shipped back to customers. To prevent air pollution from carbon fines, the carbon was immersed in water during storage in the sumps.

Environmental Releases

No environmental releases have been documented or reported from the carbon storage sumps.

Remedial Action Taken

In 1985, the facility closed the carbon storage sumps. The cleaning of the carbon storage sumps began on December 20, 1984, and concluded on February 13, 1985. Before these activities were performed, residue from the spent carbon storage sumps was removed into sealed dump trucks. Fly ash was added to absorb water and stiffen solids for landfilling. The solids were transported off-site for disposal at Chemical Waste Management's Carlyss, Louisiana, facility. Residue from the regeneration sumps was fed to trailers, and the sumps were drained. The water was treated and pumped to the POTW. Regenerated carbon was shipped to another Calgon facility for regeneration prior to shipment to customers [Harding Lawson Associates (HLA), 1985] .

During the cleaning process, the sumps were hydroblasted. The rinse water was analyzed for residual chemicals. Solids removed during cleanup were disposed of at the Chemical Waste Management facility in Carlyss, Louisiana. The washwater from the cleaning of the carbon sumps was treated and discharged to the POTW. After the cleaning process was complete, the sumps were visually observed to determine structural integrity and water tightness. No cracks were visible, and tests performed did not reveal any leaks (HLA, 1985). In 1985, Calgon submitted, to TDWR, a closure report detailing remedial activities.

Suggested Action

PRC recommends no further investigation for this SWMU.

Reasons

There have been no documented releases to the environment. The concrete sumps are in good condition and have been clean closed by the facility.

4.4 SWMU NO. 4 - SPENT CARBON STORAGE PIT (Photograph No. 6)

Description

The spent carbon storage pit was located northwest of the react building, at the rear of the facility. The pit was about 25 by 25 by 10 feet. It is not certain that the pit was lined. The spent carbon storage pit is not enclosed within the fenced area that surrounds the facility.

Status

Calgon closed the spent carbon pit in 1991. Spent carbon was stored in the pit from 1975 to 1991.

Waste Type

The pit contained spent activated carbon, contaminated with chromium.

Waste Management

Spent carbon contaminated with chromium was buried in the spent carbon storage pit. The amount of material buried is unknown.

Environmental Releases

Samples collected by the facility in 1990 detected low levels of barium (2.1 mg/kg) and high levels of benzene (25 mg/kg) in the soils adjacent to the pit.

Remedial Action Taken

Calgon removed the carbon in 1991. About 660 cubic yards of spent carbon and soil were excavated from the pit. The excavated carbon and soil were stored in 33 roll-off containers, with tarps covering the soil. Samples were obtained from each of the 33 roll-off containers and analyzed

for aniline, benzene, methyl ethyl ketone (MEK), and 2,4-dichlorophenoxyacetic acid. Analytical results of the excavated soils generally indicated low levels of aniline, benzene, MEK, and 2,4-dichlorophenoxyacetic acid. Roll-off containers containing 2,4-dichlorophenoxyacetic acid were shipped off-site for incineration. The other roll-off containers were (1) processed on-site by using a thermal desorption unit, and (2) disposed of off-site at the Chemical Waste Management facility in Carlyss, Louisiana. After confirmatory sampling by the facility revealed that all of the spent carbon and contaminated soils had been removed, the excavation was backfilled with clean soil. Calgon will submit a report to TWC, detailing remedial activities and analytical results (Calgon, 1992).

Suggested Action

PRC recommends an RFI for this SWMU.

Reasons

The storage pit may have been unlined; benzene contamination has been detected in the soils adjacent to the pit. TWC has not approved the remedial activities and analytical results.

4.5 SWMU NO. 5 - THREE BLEND PROCESS SUMPS (Photographs No. 7, 8, and 9)

Description

The three blend process sumps are located in the pretreatment process area. According to facility diagrams, the sumps are constructed out of concrete. The southeast and southwest sumps are 9 by 9 by 8 feet and have a capacity of 10,000 gallons. The north sump is 22 by 8 by 8 feet and has a capacity of 20,000 gallons. During the VSI, PRC observed waste contamination on the concrete surface of the sumps.

Status

The sumps have been active since 1973 and are not RCRA-regulated, because they are considered wastewater treatment units.

Waste Type

Industrial wastewater from process areas drain to the sumps. The wastewater varies in composition, since several different products are used by the facility.

Waste Management

Wastewater from the tank truck loading and unloading area, pump area, tank farms, and blend areas drain into the sumps. The contents of the sumps are pumped to the clarifier tank (SWMU No. 6) prior to discharge to the POTW. Integrity testing is conducted by the facility on an annual basis.

Environmental Releases

No environmental releases have been documented or reported from the blend process sumps.

Remedial Action Taken

No remedial action has been associated with this SWMU.

Suggested Actions

PRC recommends no further investigation for this SWMU.

Reasons

No release has been documented; the concrete sumps are in good condition.

4.6 SWMU NO. 6 - CLARIFIER TANK (Photographs No. 10 and 11)

Description

The clarifier tank is located inside the pretreatment building on a concrete floor. The 3000-gallon-capacity tank is used to adjust the pH of effluent and settle solids prior to discharge to the POTW. A floor drain that discharges to the blend process sumps (SWMU No. 5) is located in the building to contain any wastewater spills. Spills would flow to the floor drain, then to a blend process sump. They would ultimately be discharged back into the pretreatment process. During the VSI, PRC observed stains on the concrete floor inside the pretreatment area (Photograph No. 11).

Status

The clarifier tank has been active since 1985. It is a wastewater treatment unit and is not RCRA-regulated.

Waste Type

Industrial wastewater, containing inorganic and organic compounds is managed at this SWMU.

Waste Management

Industrial wastewater from the blend process sumps (SWMU No. 5) is pumped to the clarifier tank for adjustment of pH and settling of solids. The sludges are pumped out and disposed of off-site, and the treated wastewater is sent to the POTW.

Environmental Releases

No environmental releases have been documented or reported from the clarifier tank.

Remedial Action Taken

No remedial action has been associated with this SWMU.

Suggested Action

PRC recommends no further investigation for this SWMU.

Reasons

The clarifier tank is located in an enclosed building. Any releases from the tank would flow to a floor drain and into a blend process sump (SWMU No. 5).

4.7 SWMU NO. 7 - CHROMATE WASTE TANK (Photograph Nos. 12, 13, and 14)

Description

The chromate waste tank, constructed of fiberglass, is located in the product tank farm on the east side of the property. The tank is 7-1/2 feet in diameter and 19 feet 5 inches high, with an elliptical roof. The capacity of the tank is 6,000 gallons. The concrete containment basin of the tank farm is about 45 by 38 feet, and a 4-foot-high concrete containment dike surrounds the tank farm. During the VSI, 6 to 12 inches of rainwater were observed standing inside the tank farm containment dike.

Status

The chromate waste tank is inactive. From 1982 to 1991, it was used as a less-than-90-day storage unit. The facility plans to cut up the tank and send it out as D007-contaminated material.

Waste Type

Wastewater from Calgon's chromium zinc product line and raw chromium material were stored in the chromate waste tank.

Waste Management

Contents of the chromate waste tank were recycled for use in the chromium zinc blend process. The tank was also used to accumulate chromium wastewater for less than 90 days prior to off-site disposal at the Empak, Deer Park facility.

Environmental Releases

During a TWC inspection, conducted on November 30, 1990, and December 6, 1990, chromate waste was observed outside of the tank inside the secondary containment.

Remedial Action Taken

When a spill occurred, it was cleaned up and disposed of at an authorized hazardous waste facility. In 1991, Jones and Neuse, Inc., tested the chromate tank for integrity. Results of the testing indicated that the tank, associated piping, and secondary containment were in good condition.

Suggested Action

PRC recommends no further investigation for this SWMU.

Reasons

The chromate waste tank and the concrete containment dike are in good condition; the unit is inactive.

4.8 SWMU NO. 8 - SPENT CARBON STORAGE TANKS (Photograph No. 15)

Description

The seven aboveground spent carbon tanks are located on a concrete pad, with a 12-inch-high concrete curb, next to the react building. Each tank is 10 feet in diameter and 23-1/4 feet high, with an elliptical roof. The maximum capacity of each tank is 13,600 gallons. During the VSI, PRC observed that five of the tanks were empty and two were being used for product storage.

Status

In 1989, the facility clean closed the tanks as hazardous waste units. On October 2, 1989, TWC approved the closure of the tanks. The tanks were permitted for storage of spent carbon and regenerated carbon.

Waste Type

Spent carbon associated with the carbon regeneration process was managed at this SWMU. Two tanks are currently being used for product storage.

Waste Management

Spent carbon and wastewater from the carbon regeneration process were stored in this SWMU.

Environmental Releases

No environmental releases have been documented or reported from the tanks.

Remedial Action Taken

After the carbon regeneration process was shut down in 1982, any spent carbon that remained in the tanks was shipped off-site to Chemical Waste Management in Carlyss, Louisiana. Four of the seven tanks were hydroblasted for the purpose of cleaning the insides of the tanks. Three of the tanks which could not be hydroblasted, because their liners had deteriorated, were sandblasted to white metal. In November 1988, about 32 cubic yards of residue spent carbon and sandblasting grit were shipped to Chemical Waste Management, Carlyss, Louisiana (Calgon, 1989b).

Suggested Action

PRC recommends no further investigation for this SWMU.

Reasons

The concrete secondary containment is in good condition. The tanks have been clean closed for use as hazardous waste units, and TWC approved clean closure in 1989.

4.9 SWMU NO. 9 - FORMER KILN AREA (Photographs No. 16 and 17)

Description

The kiln was located on a concrete pad on the north side of the react building. Size, construction, and design details are unknown. The kiln was used to regenerate spent carbon. Cracks and stains on the concrete pad were observed during the VSI.

Status

The kiln was dismantled in 1985. When operational, the kiln was exempt from regulation as a hazardous waste unit under RCRA's recycling exclusion. The kiln was active from 1975 to 1982.

Waste Type

Spent carbon contaminated with organics.

Waste Management

Spent carbon was fed to the kiln, which regenerated the spent carbon by vaporizing the water and absorbed organics. The vaporized organics were incinerated.

Environmental Releases

Sampling conducted by the facility in 1991 detected barium (1.9 mg/kg), lead (0.1 mg/kg) and toluene (0.25 mg/kg) in the soils next to the concrete pad (Calgon, 1992).

Remedial Action Taken

In 1985, the kiln was dismantled by Ark Wrecking Company. The kiln was cut up on-site and sold for scrap metal.

Suggested Action

PRC recommends further investigation to characterize the soil beneath the kiln.

Reasons

Sampling conducted by the facility was confined to one area on the north edge, next to the tank farm. During the VSI, PRC observed stains and cracks on the concrete pad.

4.10 SWMU NO. 10 - TRENCH AND SUMP (Photograph No. 18)

Description

The trench and sump are associated with the SWSA (SWMU No. 1) and the BSA (SWMU No. 2). The exact dimensions and the capacity of the trench and sump are unknown. The sump is located next to the SWSA and is constructed of concrete. The trench runs behind the SWSA and the BSA.

Status

The trench and sump are active. The date on which operations began is unknown.

Waste Type

Hazardous and nonhazardous wastes from the SWSA and BSA are managed in this unit.

Waste Management

Any spills or releases from the SWSA (SWMU No. 1) and the BSA (SWMU No. 2) would flow into the trench and collect in the below-grade concrete sump. The sump contents are pumped out for off-site disposal.

Environmental Releases

No environmental releases have been documented from this SWMU.

Remedial Action Taken

No remedial action has been associated with this SWMU.

Suggested Action

PRC recommends further investigation for this SWMU.

Reasons

The integrity of the sump is unknown.

5.0 AREA OF CONCERN - SEWER LINES

This section discusses areas of concern (AOC) identified by PRC during the VSI and post-VSI correspondence. An AOC is not necessarily a SWMU; however, such an area either is potentially contaminated or provides a contaminant release pathway. AOC information is summarized in Table 1.

The facility has underground sewer lines from process areas as follows: (1) blend room to sumps, (2) pretreatment area to sumps, and (3) react area to main lift station. These sewer lines direct wastewater to the pretreatment area. Because of the amount of raw products handled at the facility, some hazardous constituents may occasionally be present in the wastewater. The facility has integrity-tested the lines.

Any spills in the flammable building would flow to the underground chemical sewer line and end at the main lift station. In 1990, an area surrounding the sewer line showed evidence of a release. Calgon replaced the underground line with an aboveground line. The facility conducted soil sampling. Barium, chromium, and formaldehyde were detected at levels below background concentrations.

An underground line from the main lift station to the property line transports all of the facility's wastewater to the POTW discharge point, about 1/4 mile east of the facility. Calgon conducted soil sampling along the length of the line. Barium, lead, chromium, selenium, formaldehyde, toluene, 1,1,1,-trichloroacetic acid and chloroform were detected at levels below background concentrations. No further investigation is recommended for this AOC.

6.0 HUMAN AND ENVIRONMENTAL TARGETS

Calgon is located in an industrial and undeveloped area in Pasadena, Harris County, Texas. Pasadena has a population of 119,363 (DMN, 1991). Calgon employs 65 people. Armand Bayou, a designated wetland, is located within 2 miles of the facility. This section discusses the potential human and environmental targets of a release of hazardous material into the environment from SWMUs at the Calgon facility in Pasadena, Texas. Potential pathways include air, soil, surface water, and ground water.

6.1 AIR

Calgon's manufacturing operations consist of blending raw materials exhibiting toxic, corrosive, and reactive characteristics. Calgon's process operations are conducted inside facility buildings. All product tanks are vented to the atmosphere, except tanks containing hydrochloric acid and sodium bisulfite. These product tanks are vented to a caustic scrubber so that any gases released to air will not contain contaminants. The potential for a release to air is low. The primary potential targets of a release would be the employees of the facility.

6.2 SOIL

Barium, benzene, toluene, methyl ethyl ketone (MEK), 2, 4 dichlorophenoxyacetic acid, chromium, and formaldehyde have been released to soils at the facility.

The potential for a release from the spent carbon storage pit (SWMU No. 4) is low because the contaminated soils have been excavated at the facility. The primary potential targets from such a release would be the employees at the facility.

6.3 SURFACE WATER

Surface water runoff generated at Calgon discharges to a central drainage ditch on Calgon's property. Runoff would flow south to Taylor Bayou, Taylor Lake, and Clear Lake. Clear Lake ultimately flows into Galveston Bay.

Within 3 miles, surface water is used for industrial water supply and navigation.

The potential for surface water contamination from the Calgon blending processes area is low, because processes either occur in an enclosed area or are provided with containment, such as curbing, diking, and sumps.

6.4 GROUND WATER

The ground-water source in the Pasadena area is the Gulf Coast Aquifer, which includes the Chicot and Evangline Aquifers. The Chicot Aquifer ranges from 400 to 800 feet thick. The Evangeline Aquifer ranges from 400 to 1,400 feet thick. Recharge to the aquifer is from infiltration of precipitation in the outcrop areas.

A public supply well owned by the City of Seabrook is located within 3 miles south of the facility. The well is screened in the Chicot Aquifer.

The potential for ground-water contamination from Calgon process and storage areas is low, because the process and storage areas are in enclosed areas or are provided with containment, such as curbing, diking, and concrete sumps.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Ten SWMUs and one AOC have been identified at the Calgon facility. Five SWMUs are active. Table 1 summarizes information concerning the status, waste type, waste management, releases, migration pathways, and remedial action for all SWMUs and AOCs. The active SWMUs are as follows:

- SWMU No. 1 - Special Waste Storage Area
- SWMU No. 2 - Bulk Storage Area
- SWMU No. 5 - Three Blend Process Sumps
- SWMU No. 6 - Clarifier Tank
- SWMU No. 10 - Trench and Sump

Based on the PR and VSI, an RFI is warranted for the following units:

- SWMU No. 4 - Spent Carbon Storage Pit
- SWMU No. 9 - Former Kiln Area
- SWMU No. 10 - Trench and Sump

TABLE 1
SWMU AND AOC SUMMARY
Sheet 1 of 4

	SWMU No. 1	SWMU No. 2	SWMU No. 3
Unit Name	Special Waste Storage Area	Bulk Storage Area	Carbon Storage Sumps
Description	• Located on the south side of the react building • Located on a 40-by-39.5-foot concrete pad • Concrete pad slopes to a trench, where spills would collect in a sump	• Two 8-cubic-yard roll-off containers • Located on the south side of the react building on a 66-by-39.5-foot concrete pad • Concrete pad slopes to a trench, where a release would be collected in a sump	• Located in the react building • Each measures 13 by 25 feet, with a sloped bottom ranging from 16-2/3 feet to 20-2/3 feet deep • Each has a 34024-gallon capacity. • Concrete construction
Operating Status	Active since 1985, used for less-than-90-day storage	Active since 1985, used for less-than-90-day storage	The facility closed the sumps in 1985.
Regulatory Status	Nonregulated	Nonregulated	Nonregulated
Wastes Type	Hazardous and nonhazardous materials	• Paper • Plastic containers • General plant refuse • Hazardous filter bags • Contaminated spill cleanup material	Spent and regenerated carbon
Waste Management	The special waste storage area stores wastes that cannot be treated at the POTW. Wastes are ultimately disposed of off-site.	Hazardous wastes are stored for less than 90 days and transported off-site for disposal.	Spent carbon was hydraulically transferred from a transport truck to the spent carbon sumps. The spent carbon was then fed to the kiln for regeneration. After the regeneration process was complete, the regenerated carbon was transferred to the regenerated carbon sumps for storage.
Release History	None	None	None
Release Pathway	NA	NA	NA
Remedial Action Taken	None	None	Carbon storage sumps were emptied, cleaned, inspected for integrity and cracks, and closed by the facility.
Release Potential	Low	Low	NA
Potential Pathway	Soil	Soil	NA
Reason for Potential Rating	Concrete pad is in good condition. Any spills would flow to the trench system and be contained in a below-grade sump.	Concrete pad is in good condition. Any spills would flow to the trench and collect in a below-grade sump.	No documented releases; concrete sumps are in good condition and have been closed by the facility.
Need for RFI	No	No	No

TABLE 1
SWMU AND AOC SUMMARY
Sheet 2 of 4

	SWMU No. 4	SWMU No. 5	SWMU No. 6
Unit Name	Spent Carbon Storage Pit	Three Blend Process Sumps	Clarifier Tank
Description	• Located northwest of the react building • Measured 25 by 25 by 10 feet	• Located in the pretreatment process area • Southeast and southwest sumps are 9 by 9 by 8 feet with 10000-gallon capacity • North sump is 22 by 8 by 8 feet,with 20000-gallon capacity.	• Located inside the pretreatment building • Has a 3000-gallon capacity
Operating Status	Closed	Active since 1973	Active since 1985
Regulatory Status	Nonregulated	Nonregulated	Nonregulated
Wastes Type	Spent activated carbon contaminated with chromium	Industrial wastewater	Industrial wastewater containing inorganic and organic compounds
Waste Management	Spent carbon contaminated with chromium which could not be regenerated was buried in the pit.	Wastewater from tank truck unloading area, pump area, tank farms, and blend areas drains into the sumps.	Industrial wastewater from the blend sumps is pumped to the clarifier tank for adjustment of pH and settling of solids. Sludges are pumped out before disposal off-site. The liquid is sent to the POTW.
Release History	Barium, benzene, aniline, methyl ethyl ketone, and 2,4 dichlorophenoxyacetic acid have been detected in the soils.	None	None
Release Pathway	Soil	NA	NA
Remedial Action Taken	Calgon clean closed the pit. About 660 cubic yards of waste and contaminated soil were excavated from the pit. Pit was backfilled with clean soil.	None	None
Release Potential	Low	Low	Low
Potential Pathway	Soil	Soil	NA
Reason for Potential Rating	TWC has not approved remedial activities and analytical results	No documented release; concrete sumps in good condition, and are physically inspected for integrity and cracks.	Clarifier tank is located in an enclosed building. Releases from the tank would flow to a floor drain, then into a blend sump. They would then be discharged back into the pretreatment process.
Need for RFI	Yes	No	No

TABLE 1
SWMU AND AOC SUMMARY
Sheet 3 of 4

	SWMU No. 7	SWMU No. 8	SWMU No. 9
Unit Name	Chromate Waste Tank	Spent Carbon Storage Tanks	Former Kiln Area
Description	• Located in product tank farm • A pad with 4-foot concrete containment dike • Measures 19 feet 5 inches high, 7-1/2 feet in diameter • Has a 6000-gallon capacity	• Seven aboveground tanks located on a concrete pad next to the react building • Each is 23-1/4 feet high and 10 feet in diameter. • Each has a 13600-gallon capacity. • Secondary containment is provided by a 12-inch-high concrete curb	• Located on a concrete pad on the north side of the react building • Construction and design details are unknown
Operating Status	Inactive since 1991	Closed as hazardous waste units in 1989	Active from 1975 to 1982; kiln was dismantled in 1985.
Regulatory Status	Nonregulated	Regulated	Nonregulated
Wastes Type	Wastewater from the chromium/zinc process and raw chromium material	Spent carbon	Spent carbon
Waste Management	Used to store chromium contaminated wastewater from the blend process for less than 90 days before disposal off-site	Storage and processing of spent carbon	Spent carbon was fed to the kiln, which regenerated it by vaporizing the water and absorbed organics. Vaporized organics were incinerated.
Release History	In 1990, a chromate waste spill was observed within the containment area.	None	Barium, lead, and toluene have been detected at below EPA corrective action levels in soils around the kiln.
Release Pathway	Air	NA	NA
Remedial Action Taken	When a spill occurred, the spill was cleaned up and disposed of at an authorized hazardous waste facility.	Tanks were emptied, cleaned out and clean closed by the facility	The kiln was dismantled. It was cut up on-site and sold for scrap metal.
Release Potential	Low	NA	Low
Potential Pathway	NA	NA	Soil
Reason for Potential Rating	The chromate waste tank and containment dike are in good condition. The unit is inactive.	Secondary containment is in good condition. Tanks were closed for use as hazardous waste units, and TWC approved closure in 1987	Sampling conducted by the facility was confined to one area on the north edge of the kiln. Cracks and stains on the concrete pad were observed during the VSI.
Need for RFI	No	No	Yes. PRC recommends further investigation to characterize contamination in the soils beneath the kiln.

TABLE 1
SWMU AND AOC SUMMARY
Sheet 4 of 4

	SWMU No. 10	AOC No. 1	
Unit Name	Trench and Sump	Sewer Lines	
Description	Trench and sump are associated with the bulk storage area and the special waste storage area	Calgon uses underground sewer lines to direct wastewater to the pretreatment area and, eventually, to the POTW discharge point.	
Operating Status	Active; date on which operations began is unknown.	Active	
Regulatory Status	Nonregulated	Nonregulated	
Wastes Type	Hazardous and nonhazardous wastes	Industrial wastewater	
Waste Management	Any releases from the bulk storage area and the special waste storage area would flow into the trench and collect in the below-grade sump.	Plant process areas drain to the underground sewer lines.	
Release History	None	In 1990, an area surrounding the sewer line from the flammable building showed evidence of a release.	
Release Pathway	NA	Soil	
Remedial Action Taken	None	Calgon replaced an underground line with an aboveground line and conducted integrity testing of the sewer lines.	
Release Potential	Low	Low	
Potential Pathway	Soil, ground water, surface water	Soil	
Reason for Potential Rating	Integrity of the sump is unknown.	Sewer lines are in good condition	
Need for RFI	Yes	No	

REFERENCES

Sheet 1 of 2

Baker, E. T., 1979, Stratigraphic and Hydrologic Framework of Part of the Coastal Plain of Texas, Texas Department of Water Resources (TDWR) Report 236.

Calgon, 1980a, Environmental Protection Agency (EPA) Notification of Hazardous Waste Activity. August 14.

Calgon, 1980b, EPA Hazardous Waste Permit Application. November 17.

Calgon, 1981, Letter from Leo Weaver to Dwight Corley, EPA. November 18.

Calgon, 1982, Letter from J. Yankov to Merton Coloton, TDWR. January 21.

Calgon, 1983, Letter from Joseph A. Fischette to Merton Coloton, TDWR. June 1.

Calgon, 1985, Part B Permit. October 29.

Calgon, 1986a, Letter from B. K. Beard to Minor Hibbs, Texas Water Commission (TWC). March 17.

Calgon, 1986b, Part B Permit Application. August 12.

Calgon, 1989a, Letter from B. Beard to William Van Evers, TWC. March 17.

Calgon, 1989b, Letter from B. Beard to George P. Hartman, TWC. August 8.

Calgon, 1991, Letter from B. Beard to S. Bredehoeft, TWC. February 4.

Calgon, 1992, Bayport Site Investigation Report.

Dallas Morning News (DMN), 1991, 1992-1993 Texas Almanac.

Federal Emergency Management Agency (FEMA), 1990, Flood Insurance Rate Map, Harris County, Texas, and Incorporated Areas. September 28.

Harding Lawson Associates (HLA), 1985, Spent Carbon Storage Sumps Closure Report. February 21.

Hershfield, David M., Rainfall Frequency Atlas of the United States, Technical Paper No. 40.

Larkin, Thomas J., and George W. Bomar, 1983, Climatic Atlas of Texas, TDWR Publication LP-192. December.

REFERENCES

Sheet 2 of 2

Muller, Daniel A., and Robert D. Price, 1979, Ground Water Availability in Texas, TDWR report 238.

Sellards, E. H., W. S. Adkins, and F. B. Plummer, 1990, The Geology of Texas, Volume 1, Stratigraphy, University of Texas Bulletin No. 3232.

TDWR, 1981, Notice of Violation (NOV) letter from TWC to John Yankov, Calgon. December 18.

TDWR, 1983, NOV letter to Terry DeWolf, Calgon. May 17.

TDWR, 1984, NOV letter to Terry DeWolf, Calgon. June 11.

TWC, 1988a, NOV letter from TWC to Betty K. Beard, Calgon. January 11.

TWC, 1988b, The State of Texas Water Quality Inventory, 9th Edition. April.

TWC, 1989, NOV letter from TWC to Betty Beard, Calgon. February 21.

TWC, 1991, Letter to Betty Beard, Calgon. January 3.

TWC, 1992, Compliance Evaluation Inspection Report. June 9.

United States Department of Agriculture (USDA), 1976, Soil Survey of Harris County, Texas.

United States Environmental Protection Agency, 1986, RCRA Facility Assessment Guide. October.

United States Geological Survey (USGS), 1982, Topographic Maps for La Porte and League City Texas Quadrangle, 7.5-Minute Series.

Williams, James F., and others, 1988, Record of Wells, Driller's Logs, Water Level Measurements, and Chemical Analyses of Ground Water in Harris and Galveston Counties, Texas, 1980-84, Texas Water Development Board Report 310.

APPENDIX

VISUAL SITE INSPECTION PHOTOGRAPHS

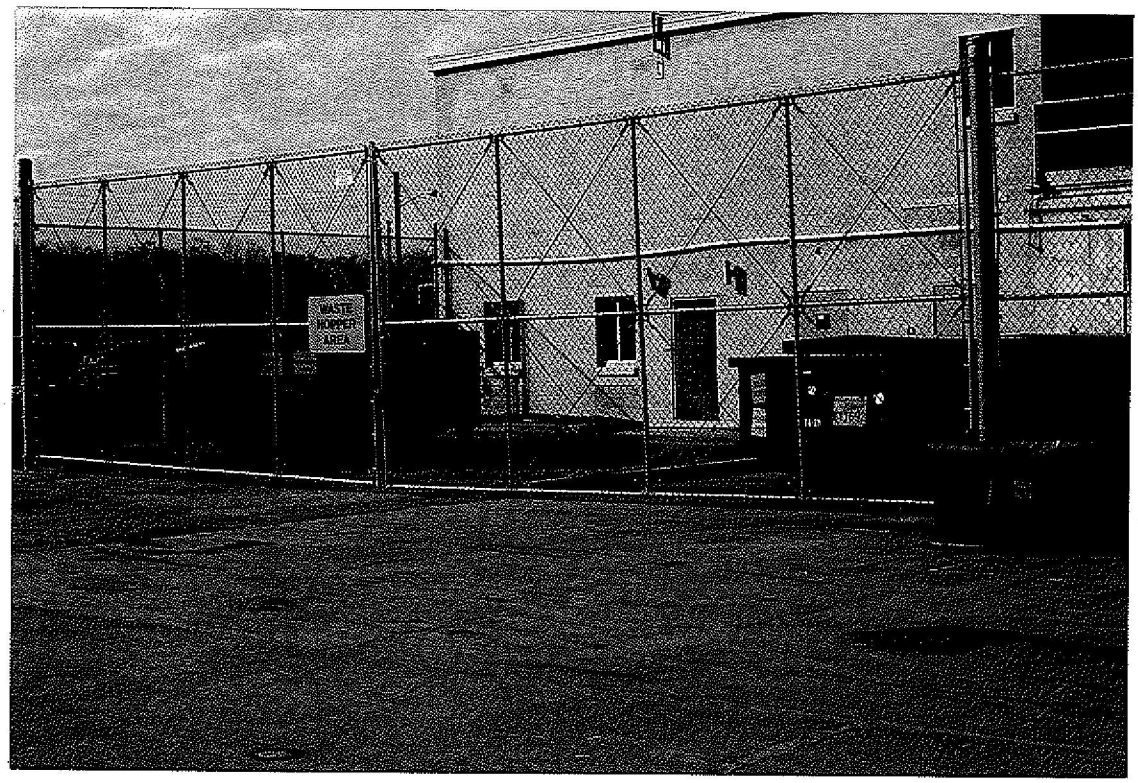
PHOTOGRAPH NO. 1

Date: 12/01/92

Orientation: West Location: SWMU No. 1

Description: The special waste storage area stores hazardous and nonhazardous wastes for less than 90 days.

PHOTOGRAPH NO. 2

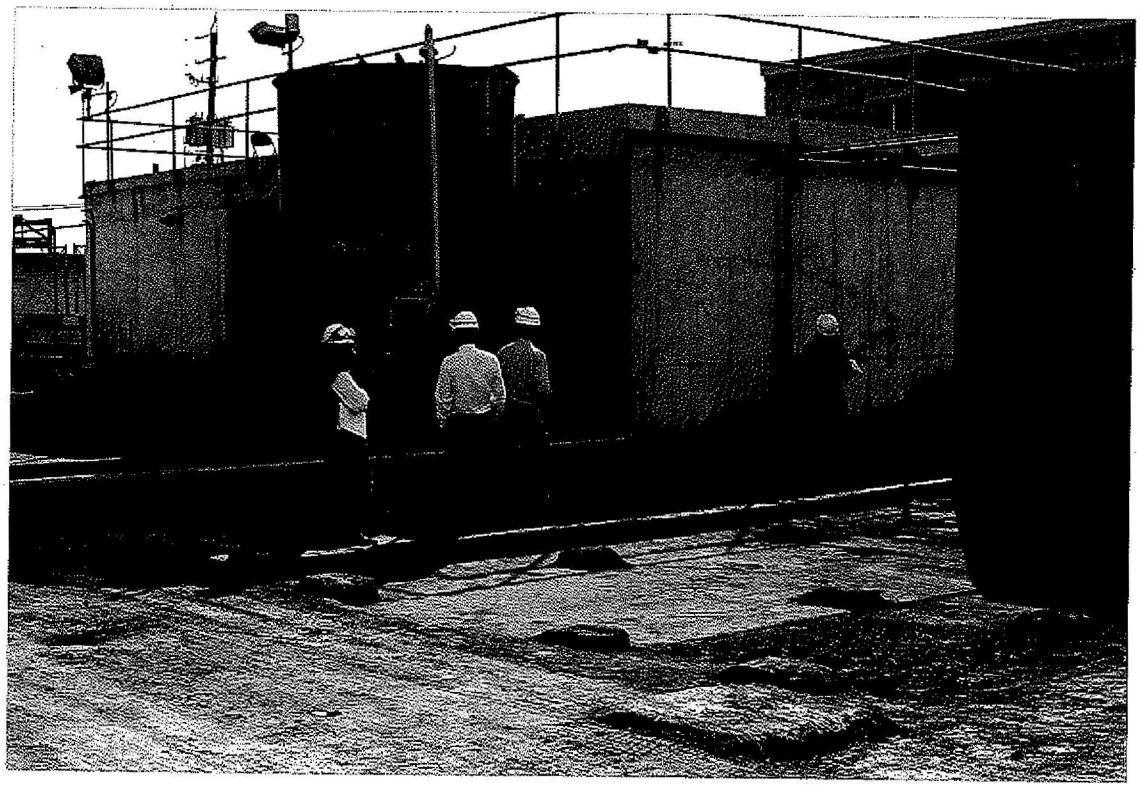


Date: 12/01/92

Orientation: West
Location: SWMU No. 2

Description: Bulk storage area; note the two roll-off containers used for storage.

PHOTOGRAPH NO. 3



Date: 12/01/92

Orientation: North Location: SWMU No. 3

Description: Inactive concrete sumps that were used for spent and regenerated carbon storage.

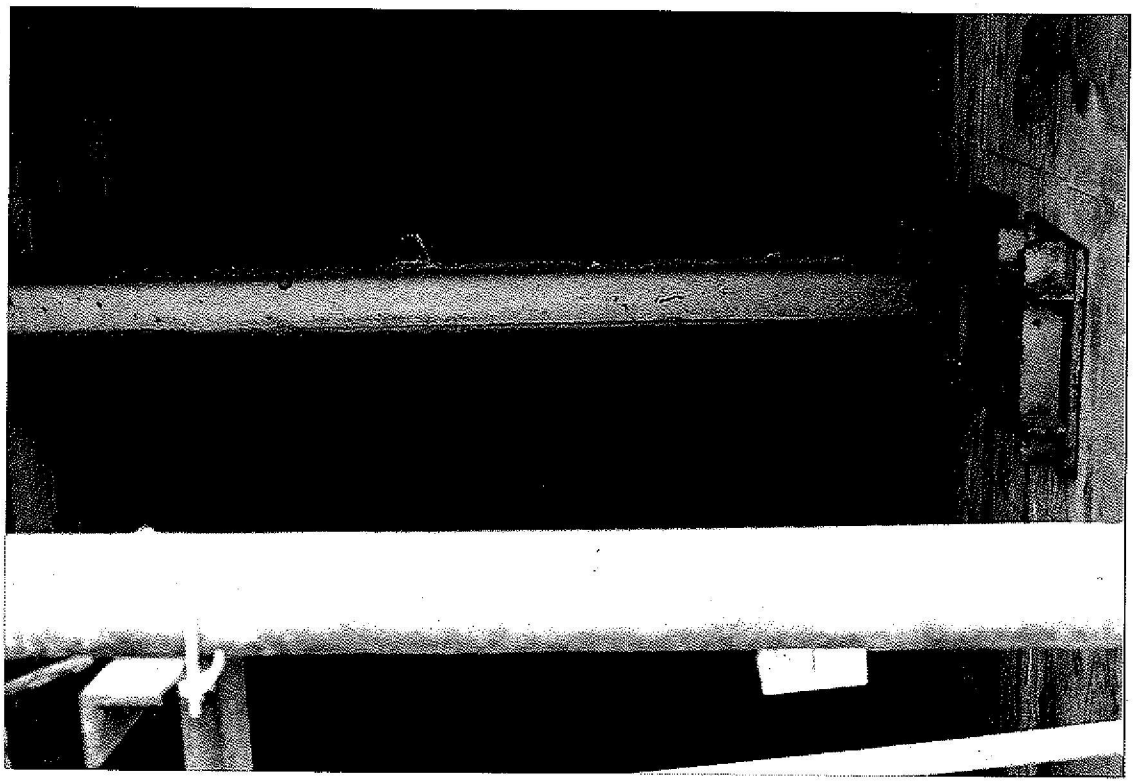
PHOTOGRAPH NO. 4

Date: 12/01/92

Orientation: South Location: SWMU No. 3

Description: View of the carbon sumps from inside the react building

PHOTOGRAPH NO. 5



Date: 12/01/92

Orientation: East Location: SWMU No. 3

Description: View of the carbon sumps from outside of the react building

PHOTOGRAPH NO. 6

Date: 12/01/92

Orientation: Northwest Location: SWMU No. 4

Description: Spent carbon storage pit; note that the pit is located outside of the property fence.

PHOTOGRAPH NO. 7

Date: 12/01/92

Orientation: West

Location: SWMU No. 5

Description: Blend process sump

PHOTOGRAPH NO. 8

Date: 12/01/92
Location: SWMU No. 5

Orientation: West
Description: Blend process sump

PHOTOGRAPH NO. 9

Date: 12/01/92

Orientation: West
Location: SWMU No. 5

Description: Blend process sump

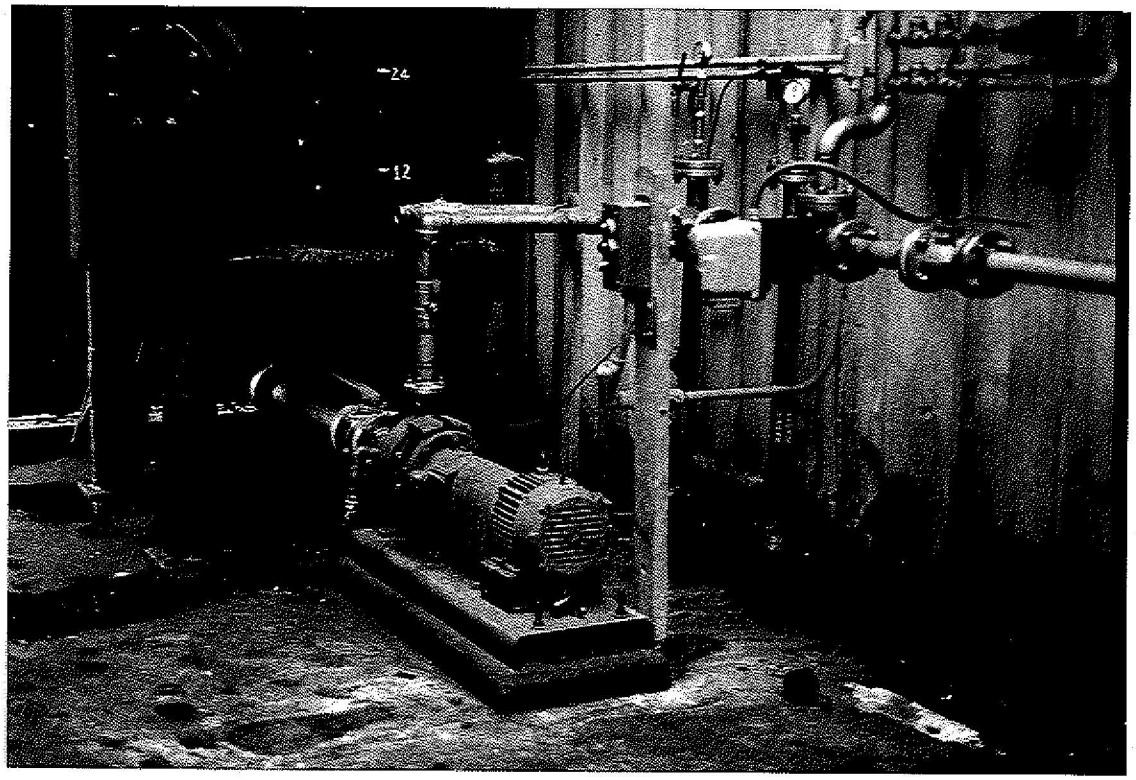
PHOTOGRAPH NO. 10

Date: 12/01/92

Orientation: West Location: SWMU No. 6

Description: Clarifier tank located in the pretreatment area with a capacity of 3,000 gallons

PHOTOGRAPH NO. 11

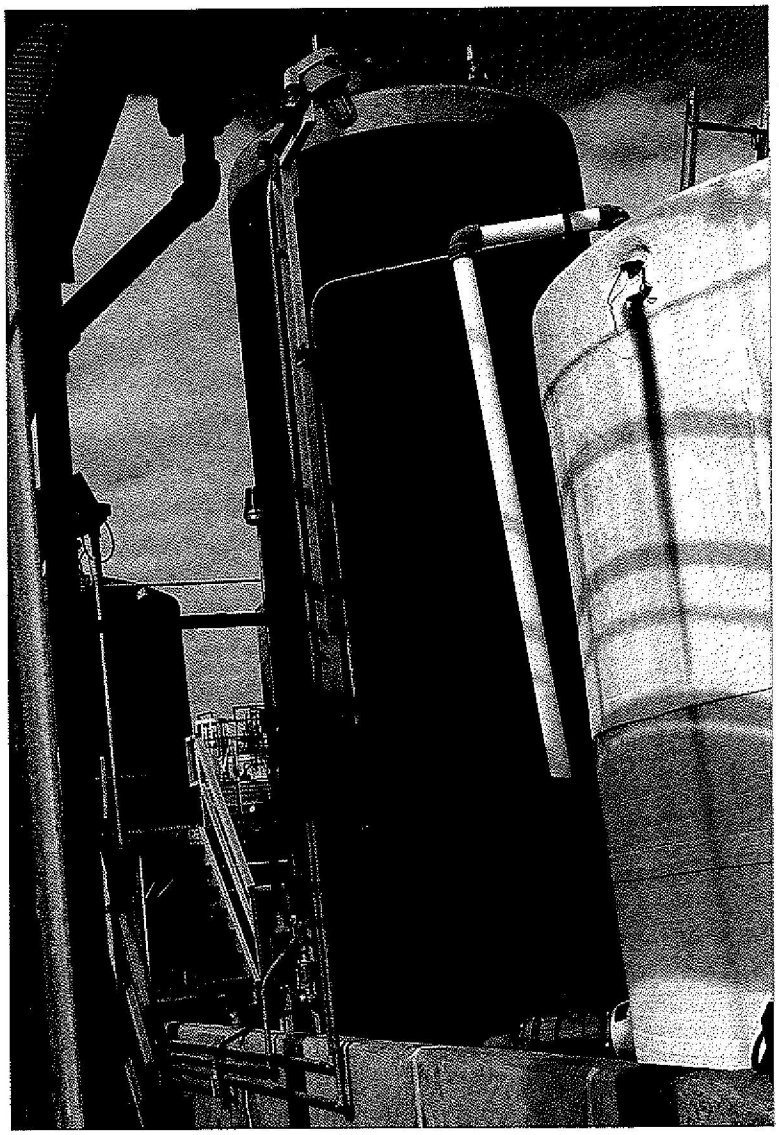


Date: 12/01/92

Orientation: West Location: SWMU No. 6

Description: Concrete floor in the pretreatment area; note stains on the floor.

PHOTOGRAPH NO. 12

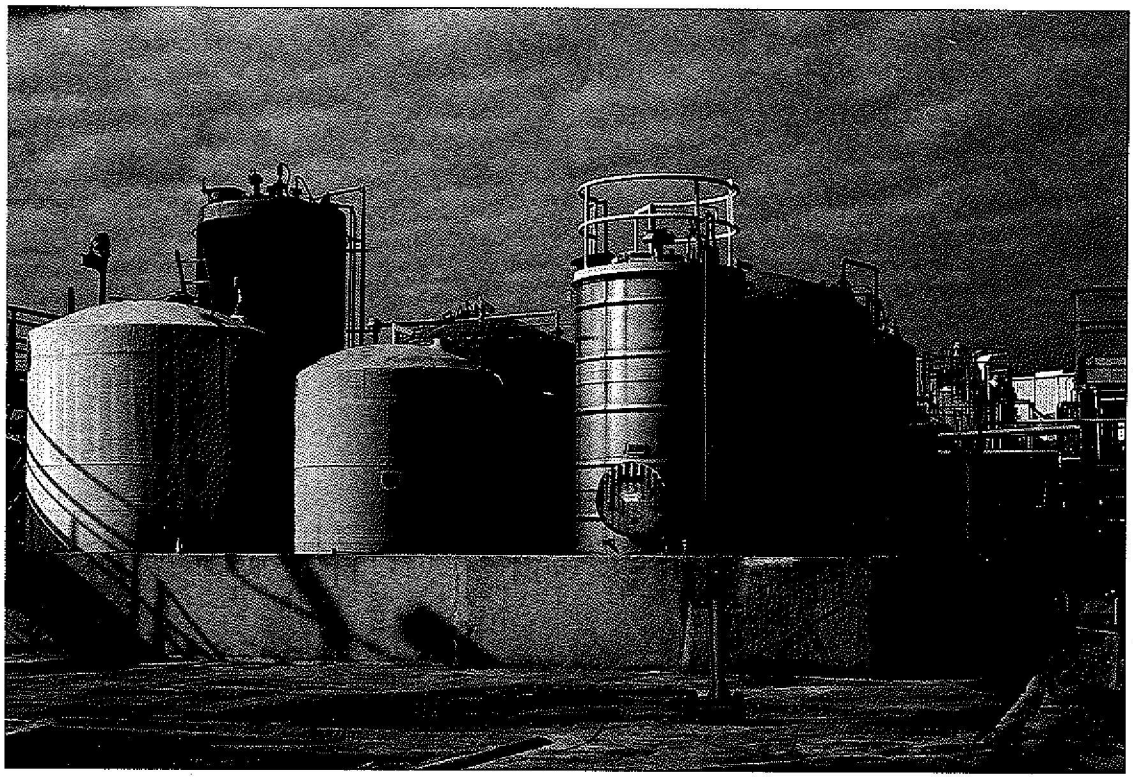


Date: 12/01/92

Orientation: North
Location: SWMU No. 7

Description: Chromate waste tank

PHOTOGRAPH NO. 13



Date: 12/01/92

Orientation: North Location: SWMU No. 7

Description: Chromate waste tank in the product tank farm; note the 4-foot-high concrete dike.

PHOTOGRAPH NO. 14

Date: 12/01/92

Orientation: South
Location: SWMU No. 7

Description: Standing water in the product tank farm

PHOTOGRAPH NO. 15

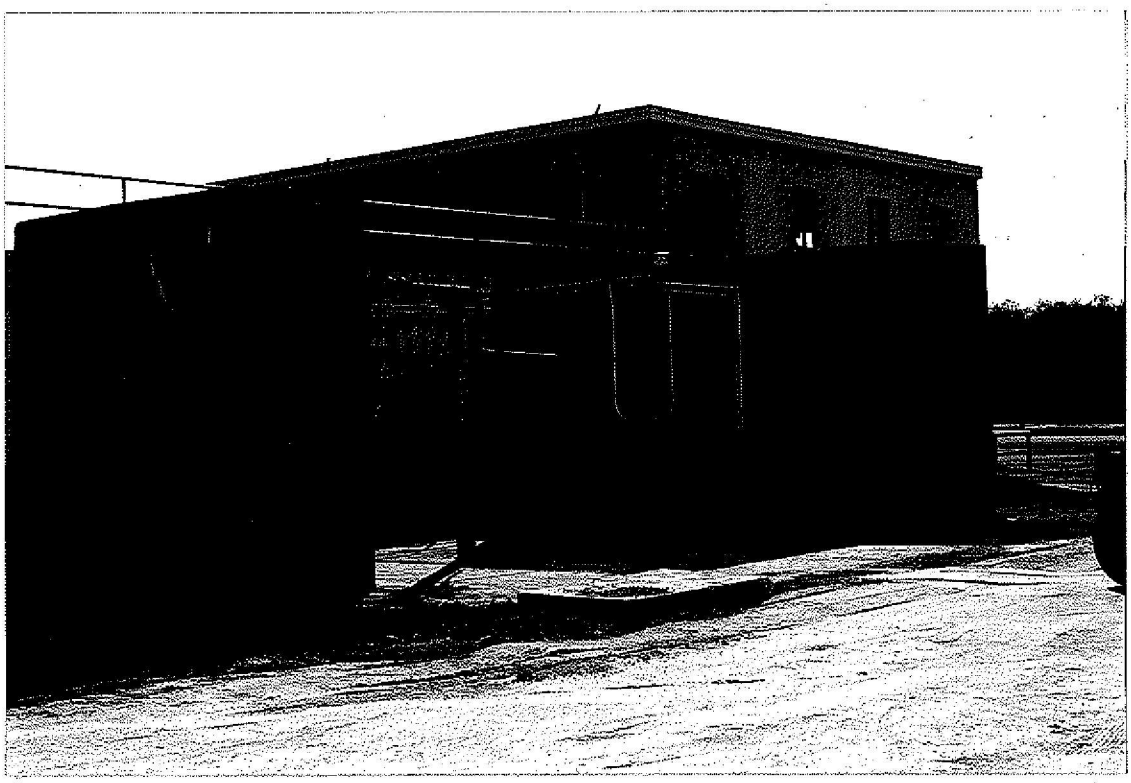
Date: 12/01/92

Orientation: South

Location: SWMU No. 8

Description: Closed spent carbon storage tanks

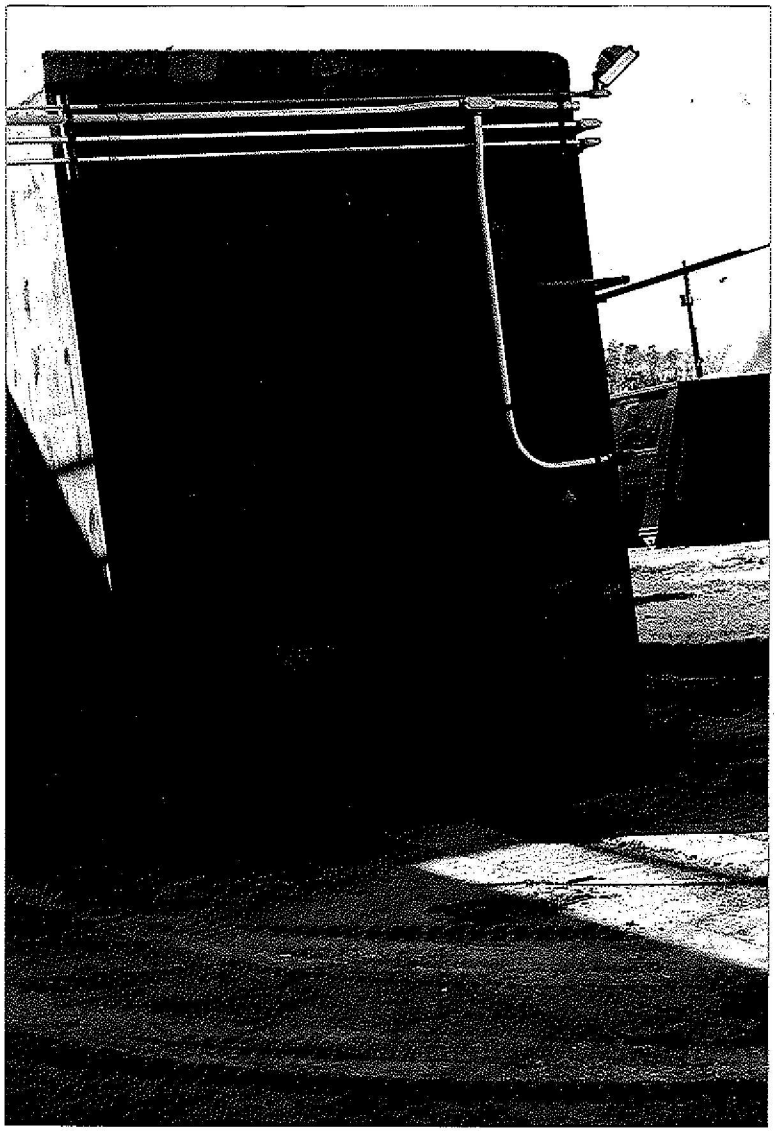
PHOTOGRAPH NO. 16



Date: 12/01/92

Orientation: East
Location: SWMU No. 9
Description: Former location of the kiln

PHOTOGRAPH NO. 17

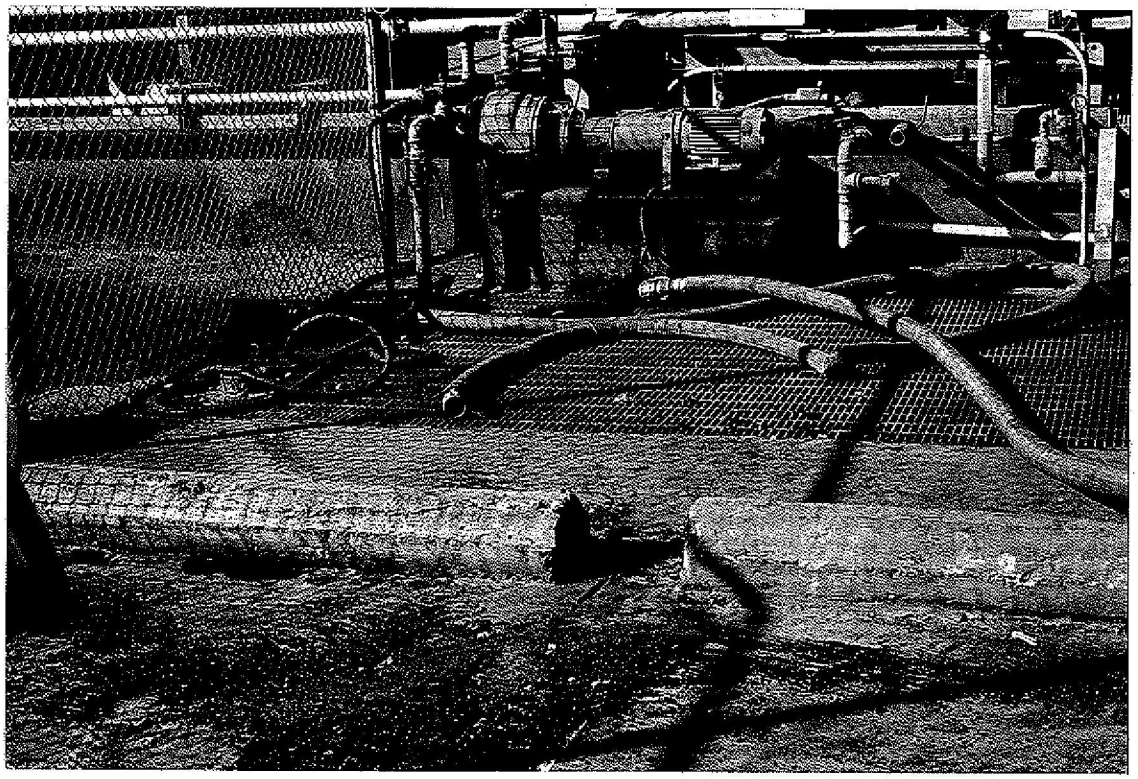


Date: 12/01/92

Orientation: East Location: SWMU No. 9

Description: Former location of the kiln; note the stains on the concrete.

PHOTOGRAPH NO. 18



Date: 12/01/92

Orientation: East Location: SWMU No. 10

Description: Concrete sump, which receives wastes from the special waste storage area and the bulk storage area.